

REMARKS

Claims 1-26 are pending.

Allowable Subject Matter

Claims 24-26 are objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the respective base claims and any intervening claims. Applicant appreciates and acknowledges the examiner's consideration and opinion that these claims are allowable. However, as discussed below, Applicant believes the independent claims recite features which are not disclosed or suggested by the cited art. Accordingly, Applicant has not rewritten the above claims in independent form.

35 U.S.C. § 102 Rejections

In the present Office Action, claims 1-23 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Khanna (U.S. Patent No. 6,539,455, hereinafter "Khanna"). Applicant submits that the claims recite features and limitations not suggested or taught by the cited art. Applicant respectfully traverses the above rejections and requests reconsideration in view of the following discussion.

Claim 1 reads as follows

“A method for fast address calculation comprising:
receiving a transfer request which corresponds to a block of data,
wherein said block comprises a plurality of sub-blocks, said
transfer request comprising an address and a mask which
indicates which of said sub-blocks are required as part of the
request;
generating a different address for each of said sub-blocks in response to
receiving the transfer request;

detecting which of said sub-blocks are required as part of said transfer request; and
utilizing only those generated addresses which correspond to the sub-blocks which are required.”

The claimed invention is generally directed to a method and mechanism for rapidly identifying particular needed sub-blocks of a transfer request. To that end, a transfer request corresponding to a given block is received, the transfer request comprising an address and a mask which indicates which of said sub-blocks are required as part of the request.

In contrast, Khanna is generally directed to a mechanism for identifying a best match within a content addressable memory (CAM) in which the contents are not presorted. More specifically, Khanna discloses two different operations that may be performed on the CAM, load and compare. Neither the load nor the compare is equivalent to the claimed transfer request. With regard to loading the CAM, Khanna discloses:

“Initially, at step 402, the IP addresses and corresponding prefix masks of CIDR addresses are loaded into the CAM words and local mask words, respectively, of CAM array 302. The addresses and prefixes may be arbitrarily loaded into CAM array 302 without pre-sorting or prearranging the addresses by prefix length or any other predetermined algorithm. Additionally, CAM array 302 may be updated at any time by adding or deleting addresses and/or their prefix masks without having to re-sort or rearrange CAM array 302. New addresses may simply be added to the next free address or any other location in CAM array 302. Similarly, addresses may be retired or deleted without regard to rearranging or condensing the remaining entries in CAM array 302. (Khanna, col. 8, lines 23-36).

As may be seen from the above, while the load operation involves addresses and prefixes, the addresses and prefixes may be arbitrarily loaded into the CAM without pre-sorting or prearranging the addresses by prefix length or any other predetermined algorithm. Prefix data does not determine which addresses are loaded, where they are loaded, or in any way which addresses are required as part of the load operation. Rather,

prefix data is simply loaded along with each address that is loaded. Thus the load operation is not equivalent to a "transfer request which corresponds to a block of data, wherein said block comprises a plurality of sub-blocks, said transfer request comprising an address and a mask which indicates which of said sub-blocks are required as part of the request" as is recited in claim 1.

With regard to a compare instruction, Khanna further discloses:

At step 404, a compare instruction is loaded into instruction decoder 314 and CAM 300 is instructed to compare comparand data provided on CBUS 326 (or in comparand register 310) with the addresses stored in CAM array 302. The comparison is masked on a bit-by-bit basis by the prefix mask data stored in the local mask words. At step 406, CAM 300 determines if there is a match and CAM match lines 322.sub.0 -322.sub.N are driven to appropriate states. The match flag signal may also be generated on line 334 at step 406.

At step 408, **the prefix logic circuits compare CAM match lines 322₀ - 322_N with the prefix mask data to determine the longest prefix among the matching CAM locations.** The longest prefix is then provided to register 316 and may be output to PFXOBUS 336. At this time, the longest prefix is known, but the location in the CAM array of the address associated with the longest prefix is not known. At step 410, register 316 provides the longest prefix to CAM 302 to be compared with the prefix mask data stored in the local mask words. The local mask words then drive mask match lines 320.sub.0 -320.sub.N with an indication of where the longest prefix is located in CAM array 302. At step 412, priority encoder 306 generates the match index of CAM array 302 at which the address and longest prefix of the matching CIDR address is located. The match index is provided to results bus RBUS 332. If more than one address has the same number of bits in its associated prefix mask that matches the longest prefix stored in register 316, then priority encoder 306 will select the location in CAM array 302 that has the lowest logical address. For an alternative embodiment, priority encoder may select the highest logical address or any other predetermined priority address." (Khanna, col. 8, lines 37-67, emphasis added).

As may be seen from the above, a compare instruction includes comparand data that is compared to stored address data. However, the compare instruction does not include mask data. Rather, the comparison is between the comparand data and addresses stored in the CAM, masked by prefix mask data stored in the local mask word that is

associated with each CAM entry. After a set of matches is found, the prefix logic circuits compare CAM match lines with the prefix mask data to determine the longest prefix among the matching CAM locations. There is no teaching or suggestion of using mask data from the compare instruction. Applicant finds no teaching or suggestion in Khanna of a "transfer request comprising an address and a mask which indicates which of said sub-blocks are required as part of the request" as is recited in claim 1.

In addition, on page 13 of the present Office Action, the Examiner states that the "loading of the addresses and prefix mask data are part of the compare instruction as they are done BEFORE the compare instruction is executed." However, Applicant respectfully disagrees, noting that Khanna describes loading, comparing, and determining which match has the longest prefix as three separate steps (Khanna, figure 4, steps 402, 404, and 408). It is further noted that prefix data is not compared to the comparand of the compare instruction, but rather to CAM match lines 322₀ -322_N. The fact that prefix data and data included in the compare instruction are used in different operations performed by different circuitry supports Applicant's contention that loading prefix data is not part of the compare instruction.

Accordingly, Applicant submits that claim 1 is patentably distinguishable from the cited art for at least the above reasons. Further, because each of independent claims 9 and 17 includes similar features, each of these claims is believed patentable for similar reasons. Likewise, as each of dependent claims 2-8, 10-16, and 18-26 includes at least the features of the independent claims upon which they depend, each of dependent claims 2-8, 10-16, and 18-26 is patentable for at least the above reasons as well.

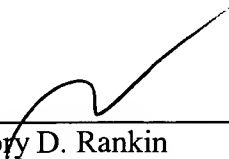
Applicant believes the application to be in condition for allowance. However, should the examiner believe issues remain which would prevent its allowance, the below signed representative requests a telephone interview at (512) 853-8866 to facilitate a more speedy resolution.

CONCLUSION

Applicant submits the application is in condition for allowance, and an early notice to that effect is requested.

If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C. Deposit Account No. 501505/5181-95300/RDR.

Respectfully submitted,



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